

## ACT-515B / ACT-515BT ACT-515 / ACT-515T True Diversity Wireless Systems



**MIPRO®**  
MICROPHONE PROFESSIONALS

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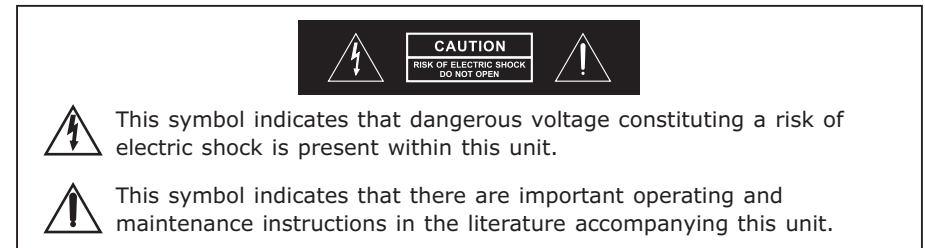
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## **! IMPORTANT SAFETY INSTRUCTIONS !**

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarised or ground plug: A polarised plug has two blades with one wider than the other. The wide blade is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plug, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over. 
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
16. Apparatus should not be exposed to dripping or splashing and no objects filled with liquids, should be placed on the apparatus.
17. Use only with the battery which specified by manufacturer.
18. The power supply cord set is to be the main disconnected device.

## **WARNING**

1. **FOR OUTDOOR USE:**  
To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
2. **UNDER WET LOCATION:**  
Apparatus should not be exposed to dripping or splashing and no objects filled with liquids, such as vases should be placed on the apparatus.
3. **SERVICE INSTRUCTIONS:**  
CAUTION - These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.



## **FC & IC - ID**

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES AND RSS-123 ISSUE2 OF CANADA. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

**Disposal** Dispose of any unusable devices or batteries responsibly and in accordance with any applicable regulations.



2005-08-13

Disposing of used batteries with domestic waste is to be avoided!  
Batteries / NiCad cells often contain heavy metals such as cadmium(Cd), mercury(Hg) and lead(Pb) that makes them unsuitable for disposal with domestic waste. You may return spent batteries/ accumulators free of charge to recycling centres or anywhere else batteries/accumulators are sold.

By doing so, you contribute to the conservation of our environment!

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## Product Overview

MIPRO is a leading manufacturer of truly innovative wireless microphone systems. No other brands can match the easy set-up of MIPRO's industry's first AutoScan and patented ACT (Automatic Channel Targeting) channel sync set-up technology.

MIPRO's ACT systems are built to handle tough conditions, delivering superb RF reliability and transparent audio performance in a wide variety of professional venues and applications.

## Accessories

### The following accessories are included:

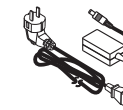
Detachable 1/2 Wave  
Antenna ×2



Audio Output Cable:  
1-pc for ACT-515/  
ACT-515B  
2-pcs for ACT-515T/  
ACT-515BT



Power Supply with Cable  
×1



User Guide ×1



## Key Features and Benefits

- ACT-515/ACT-515B is a EIA standard 19" 1/2-unit true diversity receiver.
- ACT-515T/ACT-514BT is composed of two ACT-515/ACT-515B and housed in a 19" 1U receiver.
- Receiver provides bias voltage for MIPRO antenna systems to enhance reception range and signal stability.
- Advanced true diversity technology for best reception quality.
- Dual "PiloTone & NoiseLock" circuits minimize interference.
- Backlit LCD displays group, channel, frequency RF & audio strength, A/B antenna, transmitter battery status, interference warning indicator & panel lock.
- Easy parameters set up with SET, UP, DOWN & ACT operational buttons.
- Backlit LCD is lit in green when signal is received or button pressed. Backlit LCD is lit in red when no signal or button pressed. Easy to identify working mode (green) and standby mode (red) during performance.
- Balanced XLR / unbalanced 1/4 " audio output jack, output level switch and DC input are on the rear panel.
- UHF PLL-synthesized technology for enhanced RF stability, lowered spurious emissions and increased frequency agility.
- One-touch Autoscan for a clear, interference-free channel.
- Industry's first ACT syncs automatically and quickly a working channel.
- Adjustable 'SQ' for higher sensitivity to increase receiving distance or lower sensitivity to reduce interference.
- Adjust SQ when Interference warning indicator is lit for ideal sensitivity level.
- Robust metal transmitter housings with patented mechanical design and high efficiency circuits.

## MIPRO'S Proprietary "ACT" Function & Operation

### What is ACT?

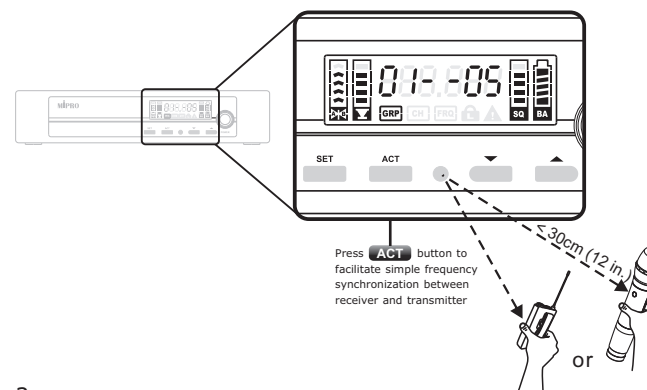
'ACT' stands for 'Automatic Channel Targeting'. MIPRO developed and patented this innovative infrared (IR) sync technology in 2001. MIPRO was the first manufacturer in the industry to automatically synchronize the frequency selected on the receiver to any ACT handheld or bodypack transmitter on the same frequency band.

### ACT Benefits:

- No manual frequency adjusting needed, unlike traditional transmitters.
- Simple, fast and precise frequency set-up without mechanical errors.
- Once the frequency has been set, the data is stored in memory, meaning that the frequency is set until it is changed by performing the 'ACT' function again, even after powering off.

### ACT Set-Up:

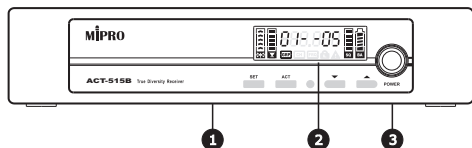
- Ensure a receiver channel is set-up and transmitter batteries are fresh, installed correctly and powered-on.
- Press the 'ACT' button on the receiver to activate the ACT syncing function. Once activated, the group/channel and working frequency start blinking.
- Bring ACT handheld or bodypack transmitter within 30cm (12") of the IR port on the receiver. The IR port is located between the 'ACT' and "▼" buttons and indicated by a round-shaped red color spot. The frequency will sync automatically.
- When the frequencies are synchronized successfully between the receiver and transmitter, the RF meter cursor and working frequency stop blinking and the indicators in the RF meter are lit.



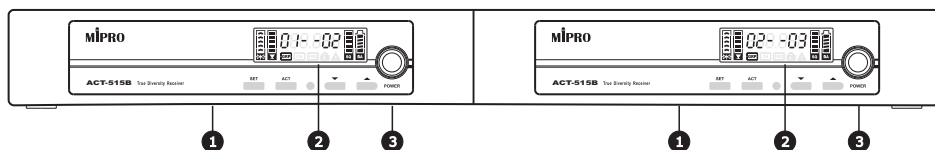
## Receiver Controls and Indicators

### Front Panel

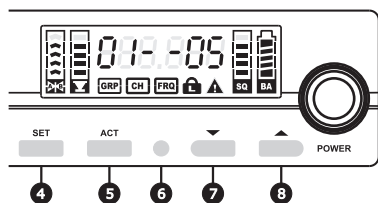
ACT-515/ACT-515B Single Channel



ACT-515T/ACT-515BT Dual Channel



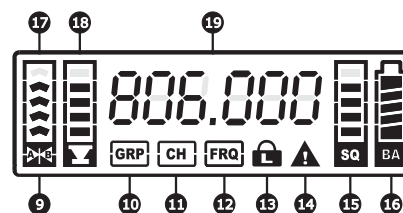
- ❶ **Receiver Panel:** LCD screen and control buttons.
- ❷ **Receiver Display:** LCD screen.
- ❸ **Power On/Off Button:** Press and hold button to turn the receiver on and off.



- ❹ **SET Button:** To set receiver parameter values like group, channel, frequency, squelch and lock.
- ❺ **ACT Button:** Facilitates simple frequency synchronization (sync) between receiver and transmitter.
- ❻ **ACT Sync Port:** Align IR sync ports of both receiver and transmitter for successful frequency synchronization after ACT button is pressed.
- ❼ **▼ Button:** Decrease parameter value.
- ❽ **▲ Button:** Increase parameter value.

## Receiver LCD Interface

### Displays all Parameters

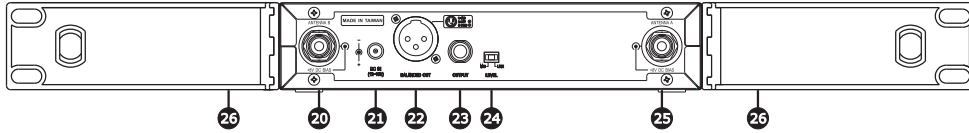


- ❹ **Antenna A/B reception indicator.**
- ❺ **GRP Group icon.**
- ❻ **CH Channel icon.**
- ❼ **FRQ Frequency icon.**
- ❽ **Lock mode icon:** Locked (lit).
- ❽ **Interference warning icon (lit).**
- ❽ **SQ Squelch Level:** Indicate Sensitivity Level.
- ❽ **Transmitter Battery Level:** Indicate current transmitter battery level.
- ❽ **RF Signal Level:** Indicate RF signal strength from the transmitter.
- ❽ **Audio Signal Level:** Indicate audio signal strength from transmitter.
- ❽ **Channel & Frequency Display:** Display Group/Channel & Frequency.

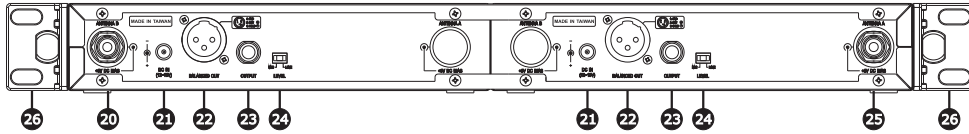
## Receiver Controls and Indicators

### Rear Panel

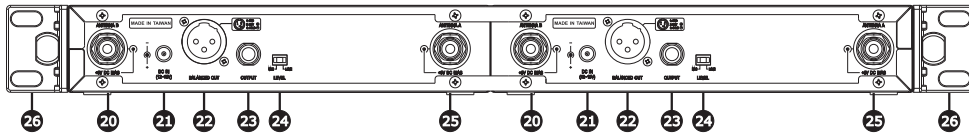
ACT-515/ACT-515B Single Channel



ACT-515T/ACT-515BT Dual Channel (Detachable 1/2 Wave Antenna × 2)



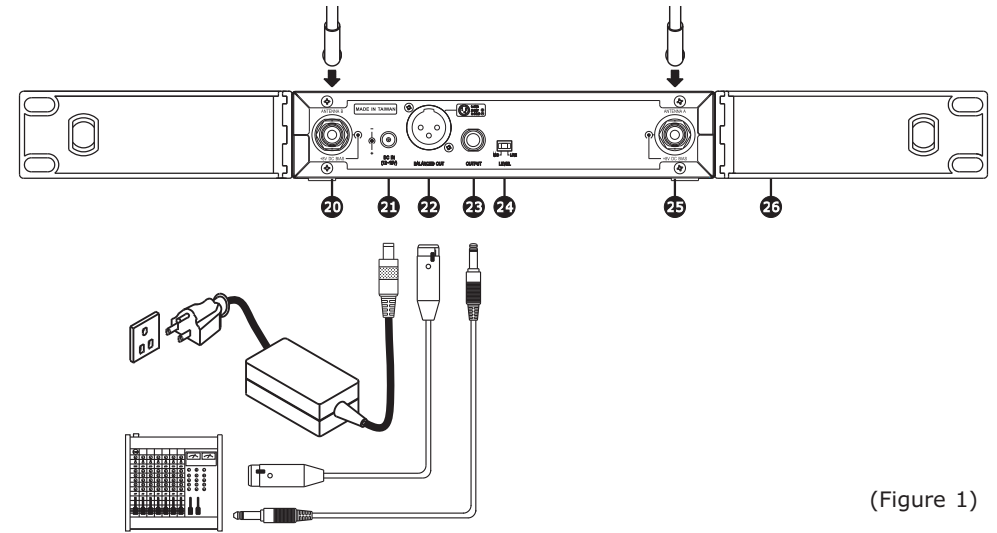
ACT-515T/ACT-515BT Dual Channel (Detachable 1/2 Wave Antenna × 4 Optional)



- ⑳ **Rear Antenna 'B' Input Connector:** The 'B' antenna can be installed directly to this antenna connector which also provides power to an optional antenna booster.
- ㉑ **DC Input Jack:** Accepts +12V DC (center pin is positive and sleeve is ground).
- ㉒ **Balanced Audio Output Jack:** XLR type connector provides balanced audio output signal from this jack to the mixer. Selectable: Mic or Line.
- ㉓ **Unbalanced Audio Output Jack:** 6.3mm (1/4") phone-jack type connector provides unbalanced audio output signal from this jack to the mixer. Selectable: Mic or Line.
- ㉔ **Mic/Line Switch:** MIC level is microphone output level (0dB). LINE level is auxiliary output.
- ㉕ **Rear Antenna 'A' Input Connector:** The 'A' antenna can be installed directly to this antenna connector which also provides power to an optional antenna booster.
- ㉖ **Rack-Mount Brackets:** Fits into a standard 19-inch rack case.

MIPRO FBC-71 rear-to-front cables can be installed for front antenna placement to improve reception quality.

## Receiver Installation



(Figure 1)

### Antenna Installation:

- Install 2 separate antennas on the antenna sockets ⑳ ㉕ on the rear panel. illustrated in Figure 1.

### Connecting the power supply:

- Plug DC plug into the DC-input jack ㉑ and the power cord, into a power outlet. ACT-515T/ACT-515BT receiver has two DC input jacks. Either is acceptable for connecting.

### Audio Output Connection:

#### Level Switch Setting Position for Unbalanced Output ㉓ :

- When connecting from receiver's unbalanced output to the "LINE-IN" jack of a mixer or amplifier or "Electric Guitar", switch the Level Switch to "LINE" position. Low sensitivity may occur if switch to the wrong level position. When connecting from receiver's unbalanced output to the "MIC IN" jack of a mixer or amplifier; switch the Level Switch to "MIC" position. Louder or quieter volume of microphone may occur if switch to the wrong level position. When using electric guitar, don't use "MIC" position as it may have generated insufficient level.

#### Connection Method of Unbalanced Output:

- When receiver and mixer/amplifier is under short distance. Or the connectors of receiver/mixer/amplifier are "PHONE" types. Using audio output cable attached with "PHONE PLUG" type, connect one end from the unbalanced output jack ㉓, of the receiver, and the other end to the "LINE-IN" input jack of the mixer/amplifier, as shown in Figure 1.

**Connection Method of Balanced Output:**

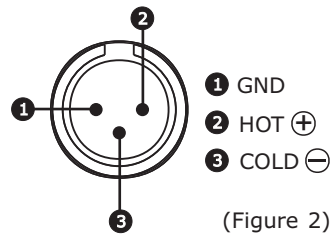
- When receiver and mixer/amplifier is under long distance. or the connectors of receiver/mixer/amplifier are "XLR" types. Using audio output cables with "XLR" or "Canon" type connectors, connect one end to the balanced output jacks ②, of the receiver, and the other end to the "MIC IN" input jack of the mixer or amplifier, as shown in Figure 1. (The configuration of the 3-pin connector is as shown in Figure 2.)

**Electrical Guitar Output:**

- Using audio output cable attached with "PHONE PLUG" type, plug one end from the balanced output jack of a receiver, and the other end to the input jack of a guitar amplifier. Switch the Level Switch "LINE" position.

**Antenna Inputs:**

- The antenna inputs provide 8-volt DC biased and are designed to work with MIPRO antenna boosters. If the connecting cable is longer than 10 meters (approx. 30'), it is advisable to install an antenna booster to ensure optimal reception.



**Receiver Operating Tips**

- Prior to powering on the receiver, ensure all transmitters are turned off and the mixer's volume control is set to a minimized setting.
- Normally, the RF meter level glows when a transmitter is powered on to indicate the receiver is ready for operation. Once an audio signal is received from the transmitter, the AF (audio) meter level glows based on signal strength. If the meter or indicator does not glow or there is no audio output, the system may not be set up properly. Re-check that the transmitter is turned on and the receiver and transmitter are on the same frequency (if not, the transmitter will need to be reset via the ACT function).
- The microphone output level needs to be adjusted at the amplifier or mixer. There is no need to adjust output levels at the receiver itself.
- Antenna dividers and receivers must be from the same frequency band.

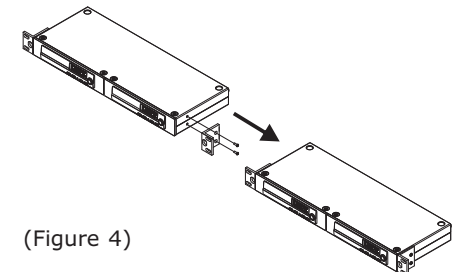
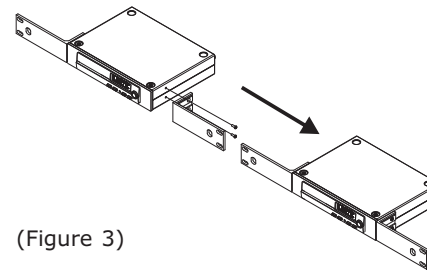
**Rackmount Installation for Receivers**

**Half-Rack Unit Receiver**

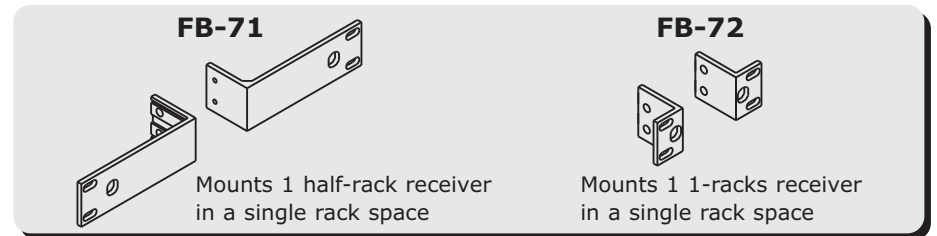
- Install the optional FB-71 rackmount kit & fasten with screws on both sides. (Figure 3)

**1-Rack Unit Receiver**

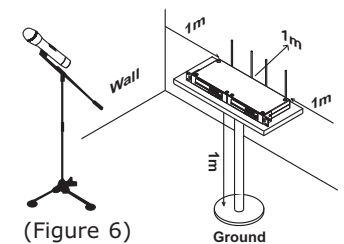
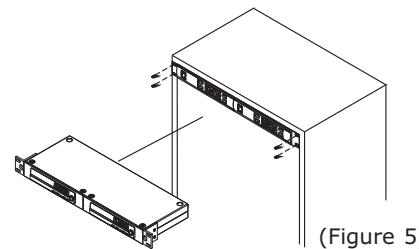
- Install the optional FB-72 rackmount kit & fasten with screws on both sides. (Figure 4)



**Receiver Rack-Mount Kits**

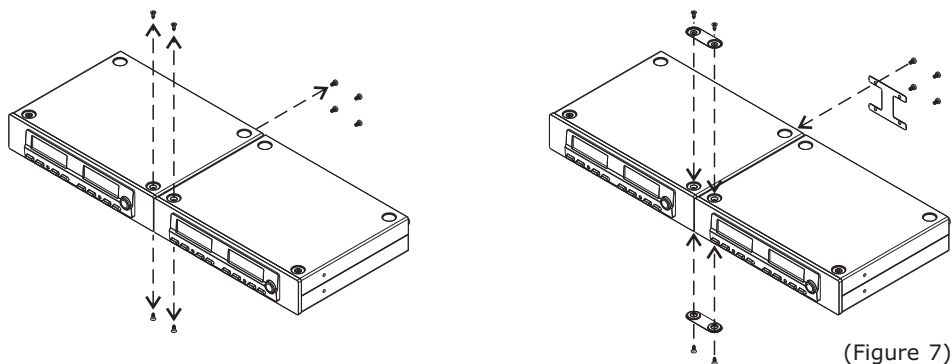


- The rack mountable kits are pre-drilled with 4 opening holes to be fitted on an EIA standard 19-inch rack case. (Figure 5)
- For ideal reception and performance, install the receiver at least 1 meter (3 feet) above the ground and away from EMI / RFI "noise" sources. In addition, place the transmitter/microphone at least 1 meter (3 feet) away from the receiving antenna, as shown. (Figure 6)

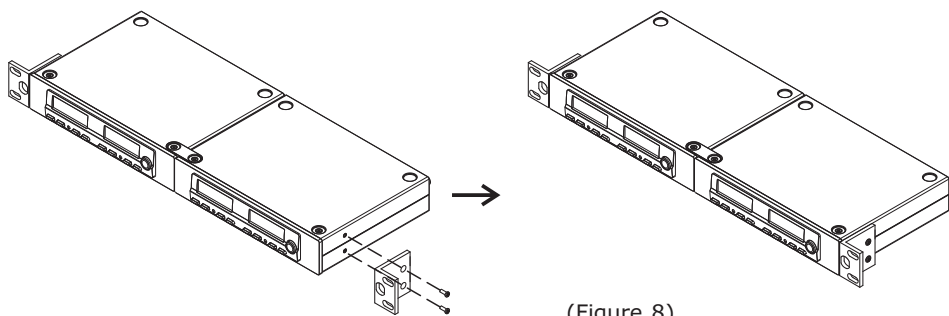


### Installation for dual half-rack receivers into a 1-rack unit for rackmount purpose

- Unfasten screws for each receiver. Push the receivers next to each other.
- Place holding plates on top and bottom of the two receivers first, and following the directions, slide both plates into position over the screw holes. Then tighten screws. Place another holding plate on the rear panel and repeat same procedures. (screws should be used in their original location; i.e., top screws for top holding plate and bottom screws for bottom holding plate).
- After both receivers are fixed together, fasten the optional rack mount kit on both sides of the joined receivers as shown in Figure 7.
- Align and install the optional rack mount kit and fasten with screws on both sides. (Figure 8)

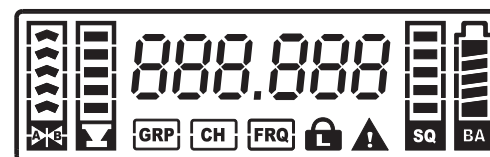


(Figure 7)



(Figure 8)

### LCD Screen Displays All Parameter Values

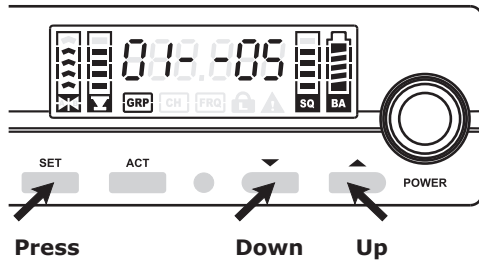


### Receiver Parameters

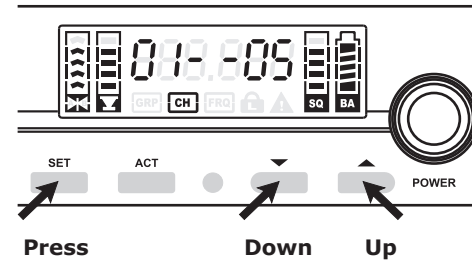
4 receiver parameters can be selected and programmed using the **SET** button.



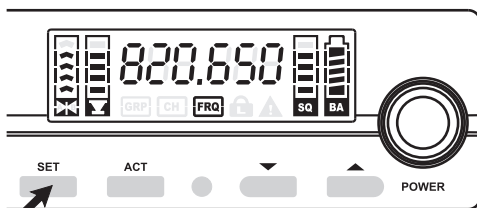
- GRP** Group
- CH** Channel
- FRQ** Frequency
- SQ** Squelch

**GRP** GROUP Setting**Instructions:**

1. Press and release the **SET** button until both **GRP** cursor and group number start to blink denoting it is ready to accept parameter changes.
2. During blinking, press ▼ or ▲ button to one of the 11 factory preset groups.
3. Press the **SET** button to confirm the change.

**CH** CHANNEL Setting**Instructions:**

1. Press and release the **SET** button until both **CH** cursor and channel number start to blink denoting it is ready to accept parameter changes.
2. During blinking, press and release ▼ or ▲ button to autoscan for a clear, interference-free preset channels.  
or  
During blinking, press and hold ▼ or ▲ button to stop one of the 8 factory preset channels.
3. Press the **SET** button to confirm the change.

**FRQ User-Defined FREQUENCY Setting**

Press

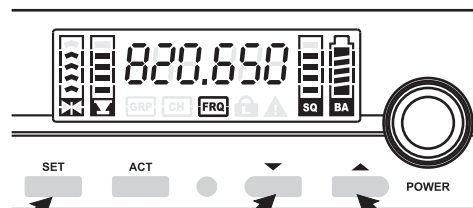
**Instructions:****NOTE:**

**(1) 961 frequencies can be user-defined and up to 8 frequencies can be stored in Group 11.**

1. Press and release the **SET** button until both **GRP** icon and group number start to blink.
2. During blinking, press and release **▼** or **▲** button to group 11.
3. Press the **SET** button until it stops at FRQ cursor.
4. Press **SET** button again until the first 3 digit of frequency starts to blink denoting FRQ it is ready to accept parameter changes.
5. During blinking, press **▼** or **▲** button to decrease or increase parameter value by 1MHz.
6. Press the **SET** button to confirm the change. Once change is saved, the last 3 digits of the frequency starts to blink.
7. During blinking, press **▼** or **▲** button to decrease or increase parameter value by 25KHz.
8. Press the **SET** button to confirm the change.
9. Up to 8 different frequencies can saved and stored into Group 11- - 01 to 08.

**Caution:**

The 8 saved frequencies in group 11 may not be compatible and interference-free and therefore, not recommended to be used simultaneously at the same venue.

**SQ SQUELCH Setting**

Press

Down

Up

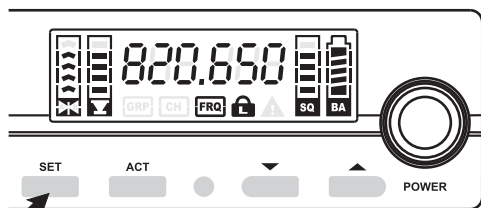
**Instructions:**

1. Press and release the **SET** button until **SQ** cursor starts to blink denoting it is ready to accept parameter changes.
2. During blinking, press and release **▼** or **▲** button to decrease or increase the squelch level.
3. Press the **SET** button to confirm the change.

**WARNINGS:**

- Decreased SQ level setting has higher sensitivity level resulting in longer, maximize reception range.
- Increased SQ level setting has lower sensitivity level resulting in shorter, limited reception range.

## LOCK Setting



Press

### Instructions:

The purpose of Lock function is to lock and prevent accidental changing of settings.

### To Lock setting:

- Press and hold the **SET** button for approximately 3 seconds until the Lock icon appears.

### To Unlock setting:

- Press and hold the **SET** button for approximately 3 seconds until the Lock icon disappears.

## Dimming & Lit Display Mode

### Dim (Stand-by) Mode:

LCD screen is lit red.

- No signals received from the transmitter or button not pressed within 10 seconds.

### Lit (Performance) Mode:

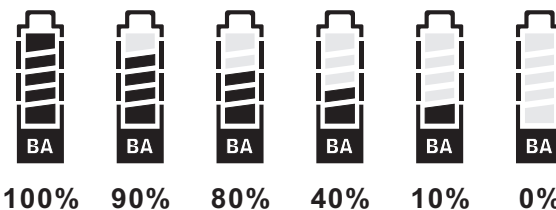
LCD screen is lit green.

- Signals received from the transmitter or button is pressed.

## BA: Transmitter Battery Level

### Battery Status:

- The battery meter is lit when the transmitter is powered on. The battery meter gives a percentage (%) indication of remaining battery life, as shown. Replace with new, fresh batteries when battery indicators fall to 10% (1 indicator remaining).
- The **BA** battery cursor starts blinking when transmitter is powered-on and signal is received. After 3~5 seconds, the cursor will stop blinking and accurate battery level will be displayed.



## Wireless Accessories & Replacement Parts

- FB-71:** Rackmount kit fits 1 ACT-515/ACT-515B receiver alone.
- FB-72:** Rackmount kit fits 1 ACT-515T/ACT-515BT receiver alone.
- FBC-71:** Rear-to-front cables only(1-pair). It allows front mount antenna placement for improved reception quality.
- AT-20:** Detachable 1/2 Wave Coaxial Antenna.
- AD-707a:** UHF 4-channel Wideband Antenna Divider System (470MHz ~ 850MHz).
- AD-708:** UHF 4-channel Wideband Antenna Divider System (470MHz ~ 850MHz).
- AT-90w:** UHF Wideband Directional Antenna (470MHz ~ 1GHz).
- AT-100:** UHF Wideband Directional Antenna (470MHz ~ 1GHz).
- AT-70:** UHF Ground Plane Antenna (1-pc, 2-pcs recommended)
- MPB-20:** UHF Antenna Booster (1-pc, 2-pcs recommended)
- AD-90S:** UHF 4-Channel Wideband Power Splitter.
- AT-90A:** UHF 4-Channel Wideband Power Amplifier.
- AD-808:** UHF 4-Channel Active Antenna Combiner.

## General Tips for Improving System Performance

1. Since the installation of the antenna influences the operating efficiency of the receiver, the most important rule is to minimize the distance as much as possible between the receiving antenna and the microphone for the best reception and performance.
2. Use MIPRO supplied antennas to ensure proper receiver sensitivity. The external DC power supply should not fall under 12V, otherwise it would not work properly. If it is over 15V, some components of the receiver will be damaged.
3. The antenna socket provides an 8V DC biased output. Therefore, shorting on the antenna socket should be avoided. Temporary shorting on the antenna socket will not affect system performance; however, continuous shorting on the antenna socket will cause permanent system damage.
4. If extended reception distance is needed, installing a MIPRO AT-90W/AT-100 directional antenna kit, which includes internal boosters will increase the reception distance.
5. Proper antenna distribution is vital to achieving ideal performance from multiple wireless systems operating in the same venue. To greatly reduce antenna clutter in multi-system installations, a MIPRO AD-707a/AD-708, UHF antenna divider system is recommended. Each AD-707a/AD-708 supports up to four UHF diversity receivers to operate from a single pair of antennas. When combined with an AT-70A/AT-70W omni-directional extension antenna and an MPB-20 antenna booster or an AT-90W/AT-100 wide-band directional antenna, the AD-707a/AD-708 antenna divider provides optimal signal reception with minimal dropouts or interference.
6. MIPRO's factory preset Interference-free channels within the same channel group are recommended to ensure optimum performance from multiple wireless systems installed in the same venue. Use of preset Interference-free channels from different channel groups may cause interference, thus is not recommended.

### Notes:

- Refer to actual product in the event of product discrepancy.
- Frequency range and maximum deviation comply with the regulations of different countries.

## Troubleshooting

Symptom	Solutions
No Sound	<ul style="list-style-type: none"> <li>• Power-on receiver &amp; transmitter.</li> <li>• Receiver is plugged into a power outlet and cable connected to mixer/amplifier.</li> <li>• Fresh batteries in transmitter and inserted with correct polarity.</li> <li>• Match receiver &amp; transmitter frequency.</li> </ul>
Signal Drop-outs	<ul style="list-style-type: none"> <li>• Close proximity between the transmitter and receiver antenna.</li> <li>• Line-of-sight path between the transmitter and receiver antenna.</li> <li>• Reposition the receiver and/or receiver antennas.</li> <li>• Receiver antennas are connected.</li> <li>• Elevate receiver antennas as high as possible.</li> <li>• Keep hands off of the transmitter antenna.</li> </ul>
Limited Range	<ul style="list-style-type: none"> <li>• Close proximity between the transmitter and receiver antenna.</li> <li>• Adjust antenna orientation.</li> <li>• Reposition the receiver and/or receiver antennas.</li> <li>• Receiver antennas are connected.</li> <li>• Undamaged antennas.</li> <li>• Fresh batteries in transmitter.</li> <li>• Adjust for proper squelch level setting.</li> </ul>
No RF Signal	<ul style="list-style-type: none"> <li>• Match receiver &amp; transmitter frequency.</li> <li>• Adjust for proper squelch level setting.</li> </ul>
Distortion	<ul style="list-style-type: none"> <li>• Reduce transmitter gain, if set too high.</li> <li>• Recommendation: set to 0dB (Mic Level).</li> <li>• Reduce receiver output setting.</li> <li>• Proper setting on mixer input gain or integrated amplifier mic level control.</li> <li>• Fresh batteries in transmitter.</li> </ul>

Symptom	Solutions
RF Interference	<ul style="list-style-type: none"> <li>• Press AutoScan button to locate a clear, interference-free channel.</li> <li>• Use preset compatible channels in the same group when operating multiple systems.</li> <li>• Place receivers away or remove the sources of RF interference like solid metal objects, electronic equipment &amp; digital devices, dimmers, effect equipment, motors.</li> <li>• Avoid operating a frequency on a local TV channel.</li> <li>• A higher squelch setting improves protection against interference. (however, resulting in limited range)</li> <li>• Turn off one transmitter, if both transmitters are operating on the same frequency.</li> <li>• Fresh batteries in transmitter.</li> </ul>
Feedback	<ul style="list-style-type: none"> <li>• Turn down the sound system volume.</li> <li>• Move microphone closer to the performer's mouth.</li> <li>• Reduce transmitter gain if set too high.</li> <li>• Position microphone further away from the speakers. Do not point towards speakers.</li> <li>• Use right type of microphone for the specific applications. Uni/Omni, Supercardioid / Cardioid.</li> <li>• Power off all unused microphones.</li> </ul>